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AGRICULTURAL MARKETING

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U. S. DEPARTMENT OF AGRICULTURE · AGRICULTURAL MARKETING SERVICE

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Contents

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Cover

The boy carrying the food package, a gift of the people of the United States, through the streets of Hong Kong is one of the millions of needy, hungry persons that have been helped by our donations of surplus foods. Howard P. Davis, Deputy Director, Food Distribution Division, AMS, traveled to the Far East to see how the overseas operation of USDA's direct distribution program is working. He tells of his trip on pages 7, 8, and 9 of this issue.

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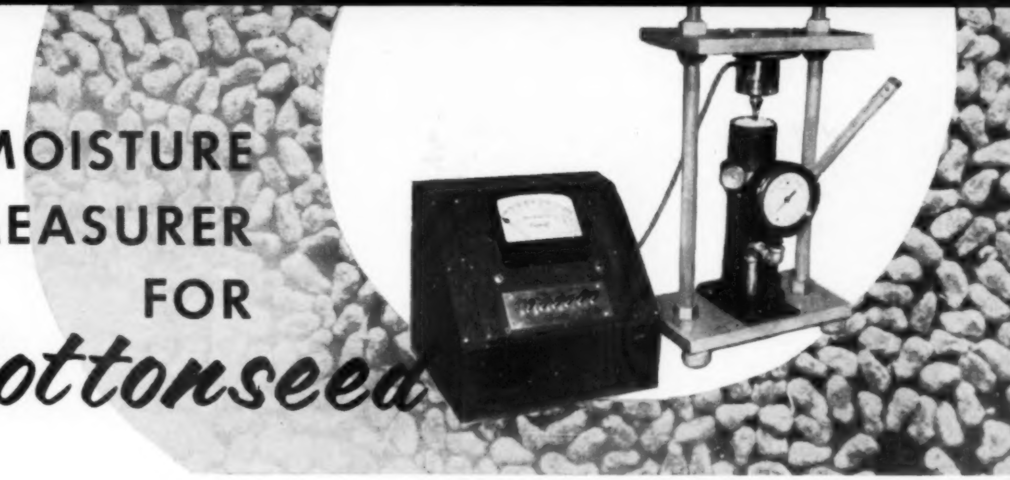
MOISTURE MEASURER FOR *Cottonseed*



AN ELECTRIC meter which provides a rapid means of measuring the moisture content of cottonseed has been developed by AMS cotton technologists Marion Whitten and Charles E. Holaday.

Every bit as accurate as the official oven method, the electric meter gives an on-the-spot reading. A sample can be measured for moisture content in less than four minutes.

Here's how it's done. The electrode of the meter (which is the real heart of the instrument) is jabbed into the sample. Pressure is applied, and the meter comes up with a reading in milliamperes. A quick conversion supplies the moisture percentage.

Compare this with the precision measuring required of the sample that goes into the forced draft oven, the overnight drying period, and again the careful weighing necessary to determine the moisture loss.

This is the present method of moisture determination approved by the American Oil Chemists Society, Association of Agricultural Chemists, and the U. S. Department of Agriculture. A 5 to 10 gram sample of cottonseed is heated to a temperature of 101° C., held there for 12 to 18 hours and then again weighed. The difference in the two weights indicates the moisture.

In another accepted method, cracked cottonseed is dried at 103° C. for 5 hours in an infra-red oven. This gives a more rapid determination but not quite as precise. The high heat may drive off other volatiles as well as the moisture.

Neither of these moisture-detecting methods are practical for use in grading small lots of cottonseed. They are too elaborate and expensive, and their operation is too time-consuming. Other electric meters that were evaluated for use with cottonseed were not found to be sufficiently accurate for this application.

The moisture percentages recorded by the USDA meter were extremely accurate. They compared most favorably with check readings made by the oven method.

Accuracy of the USDA device, however, can be affected by the pressure on the sample, differences in electrode design, and by temperature. The first two are easily regulated. Only changes in temperature necessitate a correction factor. Or, a temperature compensating feature may be used in the meter itself.

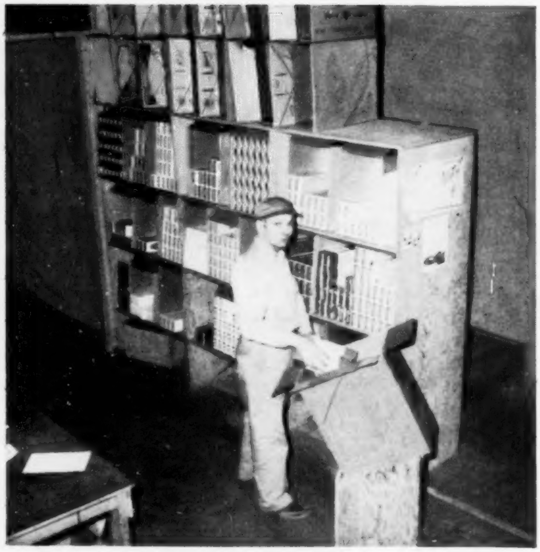
The moisture meter is now ready for redesigning for commercial manufacture. One of the changes will be to eliminate the need for a conversion table. The new instrument will give a final reading in moisture percentages rather than in milliamperes.

Other modifications are also being made to make the device adaptable to other commodities. Already, preliminary tests show that the electric meter gives accurate moisture readings for soya beans. It also worked well in limited measurements of the moisture content of raw lint cotton.

Detection of moisture is particularly important in maintaining quality. In cottonseed, high moisture promotes rapid deterioration and affects the milling outturn. It is rated as one of the most important factors in determining grade.

Yet, unless moisture can be measured quickly and inexpensively, growers are not going to have their cottonseed graded. They will continue to sell to ginners at average prices without regard to quality differences. Such a marketing practice involves inequities to both the grower and the ginner.

The electronic meter will assist in overcoming this obstacle in grading small lots of cottonseed. Its use for grading will assist growers in obtaining prices in keeping with the quality of their seed.



Improved Handling of Cigarettes at Wholesale

By John C. Bouma

A STRAIGHT line is still the shortest distance between two points. But often wholesale grocers—as well as many others involved in moving farm products—fail to organize their operational methods along this principle.

All too often warehousemen adopt haphazard work arrangements which involve many unnecessary steps and waste both time and labor.

This was the situation found by handling specialists in the Wholesaling and Retailing Section of Agricultural Marketing Service when they made a recent study of several grocery warehouses.

In one firm, researchers were able to cut travel distance in the warehouse as much as 80 percent by simply rearranging the merchandise. In another, the number of man-hours required to make up cigarette orders was reduced 67 percent by introducing a more efficient assembly method.

Researchers were particularly interested in the handling of cigarettes, that "extra" which most grocery wholesalers now stock in addition to their regular lines of groceries, produce, and frozen foods.

Cigarettes have always been a special problem. Between 30 and 40 different brands, sizes, and types of cigarettes must be stocked. Caselots must be broken down to make up orders of sometimes as few as 1 or 2 cartons of a particular brand or size.

In addition, wholesalers must affix a local or State revenue tax stamp and maintain accounting records of this function. If a wholesaler supplies retailers in several areas having different tax laws, separate accounting records and cigarette stocks must be kept.

AMS researchers made numerous time and motion studies to find out how to simplify this rather compli-

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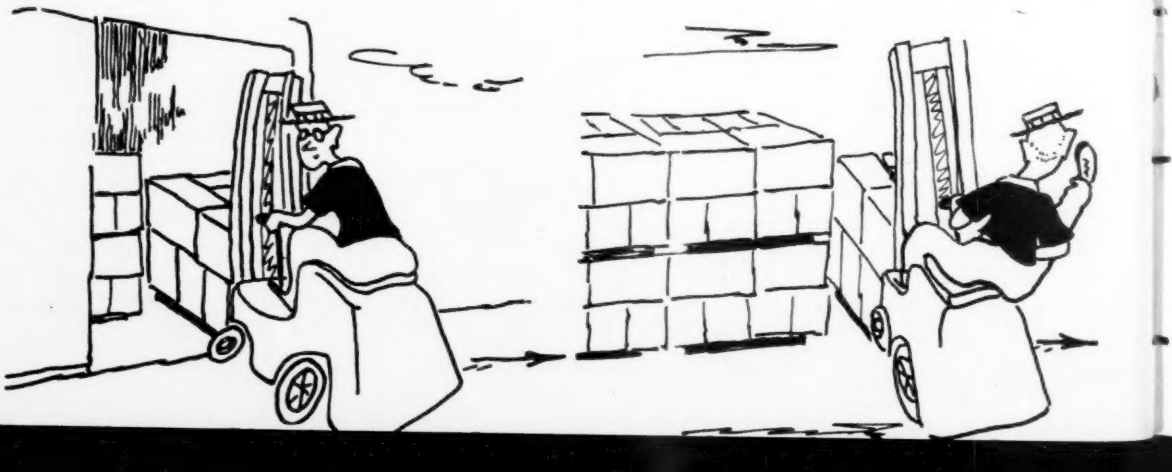
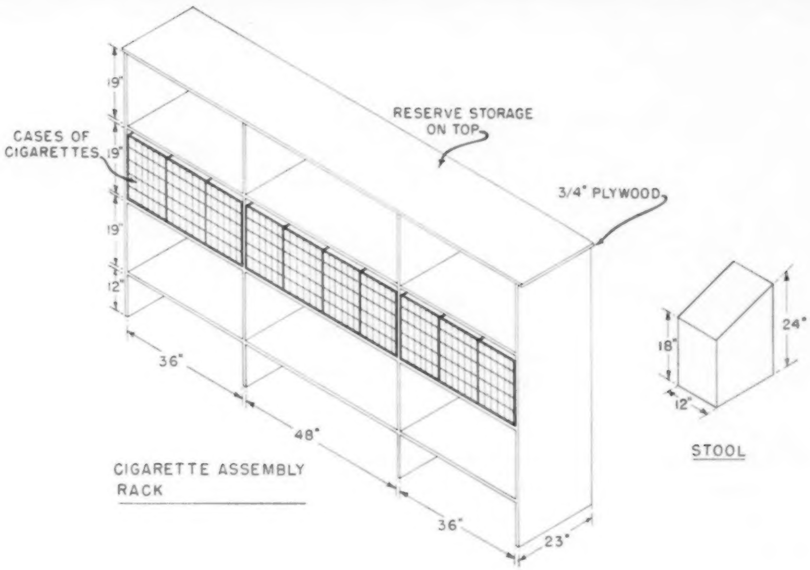
John C. Bouma is a marketing specialist in the Transportation and Facilities Branch of AMS.



Drawing shows how to make the cigarette assembly rack, stool to hold cases during assembly.



cated handling problem. From the time the cigarettes arrived at the warehouse to the time they were packed in individual orders and put on the shipping dock, AMS personnel studied the operation.

They found the product moved through 4 staging areas. (1) The cigarettes were received in caselot quantities from motortrucks; (2) they moved into temporary storage; (3) then to the stamping area; and (4) into reserve storage and assembly.

Instead of having these areas scattered throughout the warehouse, researchers lined them up—in a straight line in the smallest possible area. Travel distance was kept to a minimum; in one warehouse it was reduced from 445 feet to 90 feet.

At the same time, further efficiency was gained by eliminating waits for forklift trucks. And with the cigarettes all in one small enclosure, greater protection of the product was afforded.

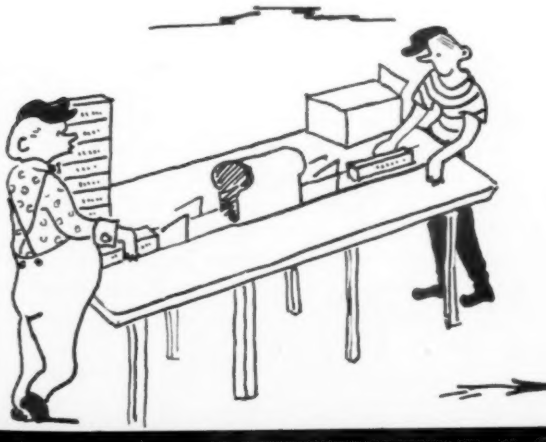
Next, researchers looked for a better way to assemble the individual orders.

They designed and installed a cigarette assembly rack which cut order assembly time more than two-thirds. Plans for the rack are shown above. How the rack works in the warehouse can be seen above left.

The order assembler stands between the stool and the rack. With only a few steps, he can pick the required cartons from the rack and assemble them in the empty case on the stool.

With this arrangement, he can assemble, check, pack, and seal a 60-carton order of 12 brands in 2.25 minutes—a job which formerly took him almost 7 minutes.

In the firm studied, 6,000 cartons or 100 cases of mixed brand cigarettes are assembled and shipped each day. With the new assembly rack, the man-hours required to handle these cigarettes were reduced from 11.3 to 3.75.



CONTINUOUS INSPECTION OF FRESH FRUITS AND VEGETABLES

By E. E. Conklin

A CONTINUOUS inspection service for fresh fruit and vegetable shippers has been inaugurated by Agricultural Marketing Service of the United States Department of Agriculture.

Long available to packers of processed fruits and vegetables, continuous inspection now will provide the fresh produce industry with similar advantages of quality control and modern merchandising.

Shippers and prepackers of fresh fruits and vegetables will now have a better chance of packing the exact quality they desire, and marketing men, in turn, will have further assurance that the products they buy measure up to grade requirements.

The Department has provided the fresh fruit and vegetable industry with an inspection program since 1918. Continuous inspection is its newest service.

Continuous inspection means exactly that. An inspector (or inspectors, if the plant is large) is constantly on duty in the packing house during the entire time of the packing operation. This service is provided at the shipping point or the terminal market.

The inspector is constantly examining samples of the produce as it passes down the line. He is ever watching to see that it measures up to the grade requirements. One of his most important duties is to let the management know whether the quality of the pack is being maintained.

E. E. Conklin is Chief of the Fresh Products Standardization and Inspection Branch, Fruit and Vegetable Division, AMS.

The shield and grade marks used under continuous inspection.

For those who subscribe to this service, this close inspection affords a valuable marketing tool. It means the plant may affix to the container a statement that the product has been "Packed Under Continuous Inspection of the U. S. Department of Agriculture." If the product meets the requirements of U. S. Grade A, U. S. Grade 1 or better, both the approved grade shield and the shield-shaped continuous inspection mark may be placed on the container.

Statement in shield used without grade designation.

To be eligible for the continuous inspection service, certain requirements must first be met. The plant and operating equipment must measure up to the specifications set down in the USDA regulations. They must be approved by the inspection service. Sanitary facilities and operating procedures must also meet USDA approval.

Finally, a contract specifying the cost and conditions under which services will be performed must be signed before the continuous inspection program becomes effective. All applicants must pay the costs of providing the service.

The availability of continuous inspection may lead to increased use of consumer standards for fresh fruits and vegetables. Although the wholesale standards can be used under continuous inspection, they permit a wider tolerance for defects than do the consumer standards, so are not as practical for use in connection with packing produce which is sold to consumers in the original package. Consumer standards have been provided for just this purpose.

There are at present consumer standards for 11 vegetables and 1 fruit—Italian sprouting broccoli, Brussels sprouts, carrots, celery, husked corn on the cob, kale, parsnips, potatoes, spinach, tomatoes, turnips, and cranberries.

Indian children receiving cups of milk at distribution center.

Surplus Foods aid World's Needy

By Howard P. Davis

The author, who is Deputy Director of the Food Distribution Division, AMS, traveled to the Far East to take a first-hand look at the overseas operation of USDA's direct distribution program and to see how our food surpluses are being used to aid needy, hungry persons throughout the world.

MY FIRST stop was Pakistan, where the government is working hard to handle the refugee problem that has resulted from the partition from India.

In recent years, hordes of people have poured into Pakistan. All are in dire need. Lacking even the barest essentials of life, they must be provided with food, clothing, and housing.

The Pakistan government is doing what it can. But it needs help—the kind of help the free nations of the world can and are supplying.

Through our Direct Distribution program in the Department of Agriculture, the United States is helping to feed these hungry refugees. The food, acquired under price support programs, comes as a "Gift of the People of the United States." It is part of our program to share our surplus foods with needy persons in foreign countries.

Last year 1,775,000,000 pounds of U.S. surplus foods were donated to the needy of 88 countries. This represents not only an increase in the number of countries but also in the amount of food. The program is, today, a huge operation.

That's why I made my trip to the Far East. I wanted to get a first-hand look at the operation of this vast distribution system. I wanted to find out how the food was being distributed, who was getting it, and what the need was.

Everywhere I went, the need was most evident. In India, Pakistan, Formosa, Hong Kong, Vietnam, Korea, the Philippines, the food which our country donates to the hungry and needy people speaks eloquently of our friendship and concern. It is most definitely needed and most gratefully accepted.

American surplus foods go to hungry school children, pregnant women, nursing mothers, and to other large groups of people who simply do not have enough to eat. Usually refugees benefit the most from our donated foods.

I found refugees everywhere. In Hong Kong, as in Pakistan, they represent the greatest, most pressing problem. Having escaped from Communism, they are here faced with the stark problem of survival. U. S. voluntary agencies are helping to alleviate their most urgent needs. They are helping substantially to make these refugees self-sufficient. Donated foods play an important role.

In Vietnam, the story is only slightly different. Still bearing the scars of battle, still in possible danger of invasion, this country relies heavily on aid from abroad.

Almost everyone in Vietnam is familiar with the food which is "Donated by the People of the United States." This food sustained whole groups of people during the period of fighting. It is helping again during the period of reconstruction.

In Ceylon, I found another government striving hard

to succeed. Donated commodities are being used to start a national school lunch program. Plans are to expand it on a permanent basis, supported by the government.

The school lunch program was also a big part of the Direct Distribution program in the Philippines. The Philippines have been taking part in the program for some time, but only on a limited scale. Now plans are being completed to expand the activity to a large-scale program to aid schools, hospitals, and some of the poor communities.

On Formosa, our foods are donated to Army dependents, poor miners and fishermen, and the people of the off-shore islands which are under constant shelling by the Red Chinese on the mainland. High officials declare that this donated food has played a role second only to U. S. military aid.

All along my route of inspection, warm thanks were expressed to the American people for making the program possible. Appreciation was expressed by the needy persons who receive the foods, officials of their governments, and by the foreign-country representatives of the voluntary U. S. service agencies who distribute the donated foods abroad. Their comments stress three real, far-reaching benefits of the program:

Primarily, donated foods have filled a real need on the part of large groups who have not had enough to eat. Our surplus has fed refugees, helped nourish hungry children, and aided in health programs.

Donations of food have also provided an important morale boost to the impoverished populations. They have provided a concrete demonstration of our willingness to share our abundance.

Another benefit comes from the excellent example our U. S. voluntary agencies are setting for these people of the Far East—demonstrating our democracy's concern for the welfare of all peoples, even the lowliest.

Marketing practices for mellorine

By Louis F. Herrmann

Competition among food fats took a new turn in the late 1940's when a frozen dessert made with vegetable fat became established in Texas. The product was legally defined as "mellorine" in that State in 1951, and to date has been legalized in 12 States. This article describes some of the features of the marketing of mellorine which may be associated with its development.

PRODUCTION of mellorine and similar frozen desserts—products resembling ice cream but made with vegetable and animal fats other than milk—increased from 11 million gallons in 1952 to 33 million in 1955.

But the rate of growth for this relatively new industry has slowed up markedly in recent years. Output in 1953 was 116 percent greater than in 1952; only 30 percent greater in 1954 than in 1953; and 5 percent larger in 1955 than in 1954.

In a survey conducted by Agricultural Marketing Service, manufacturers were asked their reasons for entering the mellorine field. Responses showed that 66 percent began making mellorine to meet the competition of other manufacturers. About 24 percent indicated that they entered the industry to expand their frozen dessert market. The remaining respondents either failed to answer this question or gave many different reasons for getting into the mellorine business.

Asked about gross margins, 48 percent of the respondents to the AMS survey indicated that profit margins on mellorine and ice cream were the same. Forty-one percent realized less profit on mellorine, and 11 percent reported a larger profit.

Louis F. Herrmann is Assistant Chief, Market Organization and Costs Branch, Marketing Research Division, AMS.

Fifty-one percent of the producers said that the margin of profit for retailers buying their products was the same on ice cream and mellorine; 47 percent said the margin on mellorine was the lower of the two. Only 2 percent reported a higher margin.

Mellorine products are now legally salable in 12 states: Alabama, Arkansas, California, Illinois, Louisiana, Missouri, Montana, Oklahoma, Oregon, South Carolina, and Texas.

Although commercial manufacture of mellorine began in 1942, no specific regulations existed in any one State until 1951. The Texas State Board of Health at that time identified mellorine and established regulations governing its sale and distribution. Since then, several mellorine-producing States have drawn up specific statutes.

Manufacturing requirements for ice cream and mellorine are almost identical. The same equipment is used for both products. The use of fats other than milk fat in the manufacture of mellorine involves only minor variations in the process.

Lower fat costs and lower ingredient storage costs are the two items that make mellorine a cheaper product than ice cream. A cost analysis reveals that differences in the cost of butterfat and vegetable fat lowered production costs below that of ice cream for 91 percent of the producers responding. Ingredient storage costs were less expensive than those for ice cream for 51 percent of the producers. Other cost factors for the two commodities were reported as about the same.

The mellorine industry, like other industries, has encountered problems peculiar to its product. Nonmilkfat products, for example, require more flavoring than do butterfat products. Hence, some producers have encountered flavoring difficulties.

Another common problem has been failure of the mix to wash clean in the vats; vegetable oil globules adhere to the walls of the mixing vats more readily than do those of butterfat. About 50 percent of the producers made no mention of any production problems.

Supermarkets and grocery stores are the principal outlets for mellorine. In 1952 these two outlets accounted for 77 percent of the total mellorine sold to consumers; by 1954, the figure was 81 percent.

Producers package most of the mellorine in half-gallon and gallon containers. A small proportion of the product is put out in bulk larger than gallon form.

Although ice cream is by far the principal frozen dessert in this country, mellorine continues to increase on a per capita basis in the 12 States where its sale is legal.

MILK, COFFEE, TEA and SOFT DRINKS

By Harry Sherr

PEOPLE everywhere in the U. S. seem to spend about the same proportion of their household food dollar for nonalcoholic beverages—the milk, coffee, tea, and soft drinks they consume at home. But they don't spend an equal amount on each of the four beverages.

Age, income, and regional differences seem to play a part here. At least, these were some of the factors indicated in the USDA Household Food Consumption Survey made in the spring of 1955 by Agricultural Marketing and Agricultural Research Services.

In the survey week, 94 percent of the households interviewed used fresh fluid milk; 91 percent used coffee; more than 50 percent served soft drinks. Only 25 percent purchased tea.

From this it is plain to see that milk and coffee were the two favorite beverages. But a simple comparison of the two percentage figures does not give the market analyst a true picture of the situation. Actually, people drank less, rather than more, milk than coffee—about 10 to 15 percent less. This is because some households that reported using fluid milk probably didn't consume all of it as a beverage, but used some for cooking and on breakfast cereal.

On a per person basis, about 3.3 quarts of fresh fluid milk were used at home during the survey week by all households interviewed. This was equivalent to more than seventeen 6-ounce cups—9 percent more than the rate of coffee consumption in the same period. But again, coffee is used solely as a beverage, whereas milk is also used for cooking and other nonbeverage purposes.

Quite understandably, people on farms used more fresh fluid milk than did urban and rural nonfarm folk. Farm families consumed 4.2 quarts per person during the survey week. Urban families used 3.2 quarts and rural nonfarm households 3.1 quarts.

Harry Sherr is an economic statistician in the Statistical and Historical Research Branch, AMS.

In the Northeast and the North Central Region the average rate of fluid milk consumption was higher for urban than for rural nonfarm households. In the South and West, the reverse was reported.

All over the country, larger families generally used more milk. This was true not only on a per household basis, but on an average per person basis.

For example, the average adult living alone used 14 cups of fresh fluid milk at home during the survey week. But consumption in families of 2 or more averaged almost 18 cups per person.

For coffee, of course, the statistics were reversed. Single householders drank about 28 cups of coffee, while the per person average for households of 2 or more came to only 15 cups.

Coffee and milk were not the only beverages surveyed. Data were also gathered for tea and soft drinks.

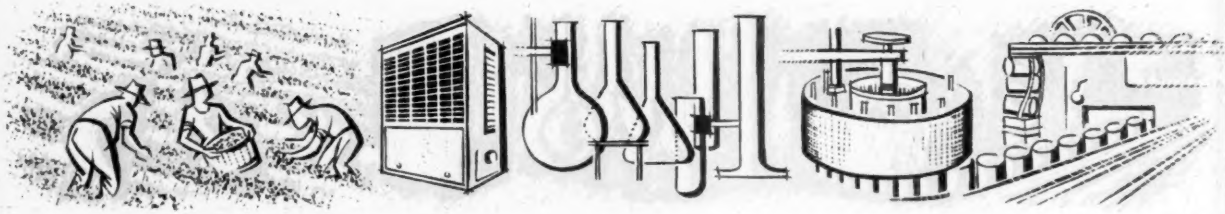
Tea, however, was bought by only a fourth of the households, and the quantity purchased averaged less than 0.03 pound per person—a little over 5 cups a week.

Interesting enough, this was more than twice the consumption rate of bottled and canned soft drinks, though only about half as many households purchased tea as used soft drinks. (The survey only obtained data on purchases of tea not on consumption.)

More tea was bought in the South than in any other part of the country. Southerners purchased somewhat more than the 0.03-pound national average compared with a low of 0.02 for Western households.

For the country as a whole, almost 15 percent of the household food dollar was spent on beverages. On the average, about 60 percent of this outlay went for fresh fluid milk, over 26 percent for coffee, 10 percent for bottled and canned soft drinks, and around 4 percent for tea.

By items, more beverage money went for fresh fluid milk in the Northeast, for coffee in the North Central Region, and for soft drinks and tea in the South.



Marketing briefs on
THE CHANGING MARKET

Fats, Oils, Chips, and French Fries

Fats and oils processors did a crisp business in 1956 supplying the record needs of frozen french fries and potato chip manufacturers.

Production of chips used about 300 million pounds of edible oils last year, compared with 135 million in 1947. Cottonseed oil supplied about 75 percent of the total, with soybean oil, peanut oil, and lard making up the rest. Oil requirements for processing potato chips are high, about 45 pounds for every 100 pounds of chips produced.

Frozen french fries took about 22 million pounds of food fats and oils in 1956. This market outlet has grown considerably since 1947 when it took only an estimated 2 million pounds. Some of the sharp increase in the past 2 years is due to the new emphasis on packaging for restaurant and institutional use.

Commercially canned fruits and vegetables rose from 13.9 billion cans to 15.2 billion in the last year. Fruits and vegetables filled more than a third of the tin cans produced in 1956.

Fewer But Larger Hatcheries

The long-term trend toward fewer but larger commercial hatcheries has continued into 1957. In the 4 years ending January 1, the number of hatcheries declined about one-fourth; average plant size increased one-fourth.

Although fewer than 6,000 plants were in operation in 1956, total output exceeded all previous years. More than 2 billion chicks and poults were produced.

Along with this trend toward large-scale production has come a more specialized type of production. The dual-purpose chick is fast fading from the scene. There is very little commercial demand for this type bird.

Because of the year-round demand for broilers, compared with the more seasonal demand for replacement chicks, more broilers than replacement chicks were produced. Two-thirds of the year's output was in broilers; only one-third in egg-type chicks to be raised for the replacement of laying flocks.

The most recent and greatest expansion in the hatchery business has occurred in the South Atlantic and South Central States. Here, broiler production has more than doubled since 1950.

Georgia, however, continues to produce more broilers than any other State; New Jersey is the biggest producer of replacement chicks.

Poultry Byproducts and Waste

Unless a poultry slaughtering plant handles a large volume of birds, it probably isn't wise to add a plant for processing byproducts and waste.

This is the finding of economists and engineers, who made a detailed study of operating costs and methods of byproduct processing in poultry slaughtering plants for the Market Organization and Cost Branch of AMS.

If a plant slaughters less than 100,000 pounds (live weight) of poultry per week, it isn't usually profitable for the plant to render its own byproducts. The costs involved in operating a rendering plant would exceed present disposal costs.

Even with a volume of between 100,000 and 300,000 pounds of poultry, a rendering operation may cost as much as other current disposal procedures.

It would take a big operation with a weekly slaughter of more than 300,000 pounds of poultry to operate an integrated rendering plant profitably. Then the returns on the investment become fairly attractive, particularly when the 500,000-pound mark is passed.

Extraction of fat or the production of blood meal (ground dried blood) appears impractical at slaughtering volumes below one million pounds live weight per week.

More information on byproduct processing is given

in MRR 181, "Processing Poultry Byproducts in Poultry Slaughtering Plants." This report gives detailed costs for plants of several different sizes and indicates breakeven points for each size plant. It also illustrates the steps required in processing byproducts and wastes in salable fertilizer and feed products.

Two new marketing research organizations have been established in the dried fruit industries of California. One is a new department in the California Prune and Apricot Growers Association. This department has been created to search for new dried fruit products and new processes. The second new marketing research group is an independent organization to coordinate research on raisins, prunes, figs, and cut fruits. It met for the first time last May in Berkeley.

Peeled Potato Industry Surveyed

The peeled potato industry is increasing rapidly as a market outlet for potatoes, according to Agricultural Marketing Service specialists.

From 1953 to 1955, the number of firms peeling potatoes commercially increased by a third—from 120 to 165 companies. At the same time, the overall volume of commercially peeled potatoes went up 50 percent. It rose from 3.2 to 5 million bushels.

Lye was the preferred method for prepeeling potatoes. More whole potatoes and french fries were prepeeled by this method than by either steam or abrasives.

Companies that used lye, however, produced more french fries than whole potatoes. The same was true for firms peeling with abrasives. Firms using steam turned out about equal amounts of whole potatoes and french fries.

Russet Burbank was the most widely used variety of potatoes used by the prepeeling industry. Katahdin, California long whites (White Rose variety), and Sebago ranked next in importance of use.

About two-thirds of the plants reporting on varieties and grades said they used more utility or U. S. No. 2 grade of Russet Burbanks. U. S. No. 1 was their next choice. For California long whites and other varieties, U. S. No. 1 was used almost entirely.

Almost 60 percent of all prepeeled potatoes was packaged in 30-pound kraft paper bags with polyethylene liners—an increase of 11 percent in the 2-year period. Others went into kraft paper bags with wet strength and paper bags with wax liners in that order.

Further study is being made of the peeled potato industry. A detailed analysis of costs in peeling plants is currently being prepared by AMS.

More Cotton Used by Military

Eleven percent more cotton was used by our armed forces in 1956 than in the year before.

Cotton went into about 80 percent of the total textile deliveries to the military. It appeared in a wide variety of fabrics ranging from poplin to duck and twill.

Figured on a basis of bales of raw cotton, here's how the two years' consumption figures stacked up. In 1956 an equivalent of 94,000 bales of cotton were used by our armed forces. In 1955 the military used 66,000 bales.

Poundwise, cotton's share was 45 million pounds in 1956. Manmade fibers made up about 6 million pounds of textiles used by the armed forces, and wool, nearly 5 million pounds.

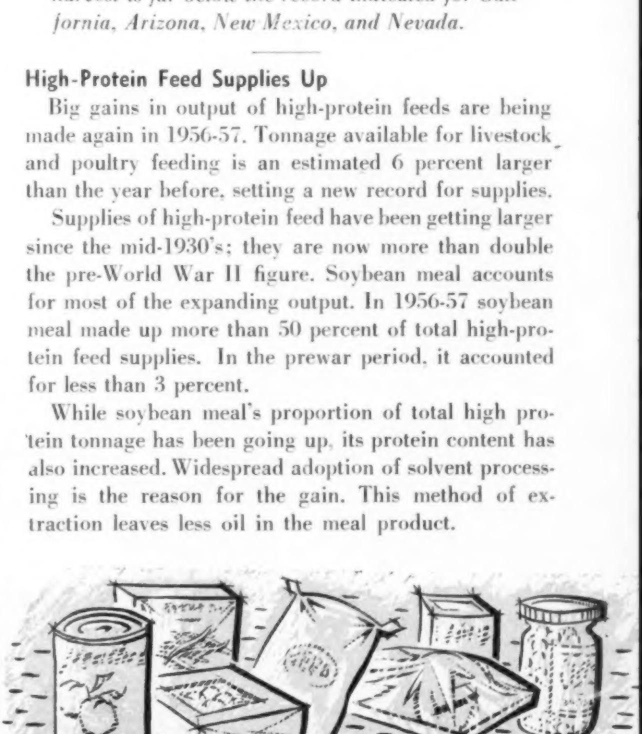
Western cotton growing States in 1957 planted the fewest acres of any area but will pick the highest yields. Their yield this year is estimated, as of August 1, at 984 pounds per acre for harvest—the highest on record. States in the Delta area are expected to harvest the second highest yield, but their estimated 458 pounds per acre for harvest is far below the record indicated for California, Arizona, New Mexico, and Nevada.

High-Protein Feed Supplies Up

Big gains in output of high-protein feeds are being made again in 1956-57. Tonnage available for livestock and poultry feeding is an estimated 6 percent larger than the year before, setting a new record for supplies.

Supplies of high-protein feed have been getting larger since the mid-1930's; they are now more than double the pre-World War II figure. Soybean meal accounts for most of the expanding output. In 1956-57 soybean meal made up more than 50 percent of total high-protein feed supplies. In the prewar period, it accounted for less than 3 percent.

While soybean meal's proportion of total high protein tonnage has been going up, its protein content has also increased. Widespread adoption of solvent processing is the reason for the gain. This method of extraction leaves less oil in the meal product.



Calibrating

COTTON FIBERI

By John W. Wright

IN THE United States, Japan, Germany, Sweden, Canada . . . all around the globe cotton laboratories are "zeroing in" their fiber testing instruments to meet the specified standards of the International Cotton Calibration Standards Committee. They are adjusting their machines so that cotton technicians everywhere can operate on the same basis.

Over 150 laboratories—more than a third of them in foreign countries—are keying their instruments to "calibration cotton" distributed by the Cotton Division of Agricultural Marketing Service. In all, there are three samples which give high, medium, and low readings in the Micronaire test for fiber fineness and the Pressley test for fiber strength.

The Micronaire and Pressley testing instruments are the ones most widely used in world trade. The Micronaire is a device which can rapidly measure the fineness and maturity of cotton fibers, in combination. The Pressley Strength Tester is used in determining the tensile strength of cotton fiber.

John W. Wright is Chief of the Standards and Testing Branch, Cotton Division, AMS.

Other cotton fiber testing machines include the Suter-Webb Fiber sorter, the Fibrograph, the nep test machine, and the Shirley analyzer. Used in connection with some of these testing machines is the mechanical cotton fiber blender which was developed by USDA cotton technicians. This device is a mechanical means of mixing the individual fibers in a cotton sample into an homogenous mass so that specimens taken from any part of a blended sample are truly representative of the sample.

The Suter-Webb fiber sorter is an instrument which, by means of a bank of combs, facilitates sorting out the various lengths of cotton fibers in a sample of cotton so that the complete range of lengths may be arrayed on velvet-covered board. (This instrument is more widely used in research studies than it is for general testing of samples since running one test takes an average of three hours.)

The Fibrograph, a photoelectric device, provides a measure of the length and length uniformity of the fibers in a sample of cotton.

The recently developed nep test machine processes a blended sample into a thin web so that neps (small

Laboratory technician performs test for determining the nep content of cotton lint using nep test machine.

INSTRUMENTS

tangled knots of fibers) per 100 square inches of web may be counted.

The Shirley Analyzer separates foreign material from fibers in samples of raw cotton, providing a method of measuring this trash by weight.

Throughout the years, USDA has encouraged the use of cotton testing instruments in connection with research and as a means of supplementing the quality evaluations made by cotton classers.

In the past it was possible to judge the fineness and strength of a cotton sample by its fiber length. This was because both fineness and strength were highly correlated with fiber length. The greater the staple length, the finer and stronger the cotton. Conversely, the short staple length indicated coarse and weak fiber.

However, cotton specialists have developed varieties which combined these various characteristics and the old rules of thumb no longer apply. Some cottons now may be short stapled but fine, and vice versa.

As a consequence, in addition to specifying the grade—which indicates color, preparation (how the cotton has been ginned), and leaf (amount of foreign material in the cotton)—and the staple length, the cotton buyer today is also likely to indicate the fineness he desires by specifying the appropriate Micronaire reading. Possibly he also specifies the fiber strength he wants in the cotton he orders.

In this way, the spinning mill which makes fine strong yarn for shirting can order—and be sure of getting—the fine, long-stapled, strong type of cotton it needs. The manufacturer of cotton bags or cotton filters can also obtain the kind of cotton he needs—the less costly, coarse and short-fibered cottons.

Micronaire determinations are being made with ever-increasing frequency throughout the world. The New Orleans and New York Cotton Exchanges have adopted Micronaire measurements and specifications for fiber fineness in connection with future trading.

The Bremen Cotton Exchange has established a cotton fiber testing laboratory in response to requests from its exchange members.

And the International Federation of Cotton and Allied Textile Industries has indicated that the Micronaire test for determining Fiber fineness is now sufficiently established as to require its use in cotton trade arbitrations.

It was because of such developments that the necessity for standard calibration cottons arose. Obviously, the more nearly all technicians in laboratories of this country, as well as in all laboratories around the world, obtain the same results the more meaningful will be their respective measurements and the more world trade can be facilitated.

Performing tests on cotton lint using Suter-Webb fiber sorter.

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Farm Family Level of Living

By Margaret Jarman Hagood and Gladys K. Bowles

FARM family living in California in 1954 was better than in any other State if you use as indicators the percentages of farms with electricity, telephones, and automobiles, and the average value of products sold or traded.

Ninety-six percent of California farms had electricity; 77 percent had telephones; 88 percent had automobiles. The State owed its top ranking to the high value of products sold—$18,370 per farm-operator family.

Two East Coast States followed California among the ranking indexes of farm-operator level of living in 1954—New Jersey was second, Connecticut third. A Mid-West State—Iowa—ranked fourth.

The indexes are based on four items that give clues to goods, services, and other satisfactions enjoyed by rural families—percentages of farms with electricity, telephones, and automobiles, and the average value of products sold or traded.

AMS studies show that farm families that can afford these conveniences, and have substantial gross incomes, will avail themselves of greater quantities of other goods and services. The index is a measure of a farm-operator family's economic level and purchasing power.

Farm-operator families for the country as a whole improved their level of living significantly between 1950 and 1954. In that period, the index rose 15 percent, from 122 in 1950 to 140 in 1954 (1945=100).

In 1930 the average of the indexes for all counties in the U. S. was 75. Between 1930 and 1940 it rose only 5 percent. Between 1940 and 1945, it went from 79 to 100, or an increase of 27 percent.

Between 1950 and 1954 gains occurred in all States, geographic divisions, and regions. Highest levels were in the Northeastern Seaboard, Pacific Coast States, and the Corn Belt.

Although Mississippi had the lowest State index in 1954 as well as in 1950, its average level rose significantly in the 4-year period—from 57 to 84. Eighty-five percent of the farms in the State had electricity, 14 percent telephones, and 39 percent automobiles. The average value of products was $2,130.

Alabama, with the second lowest index, had the lowest average volume of products sold, $1,716. But 88 percent of the farms in the State had electricity, 16 percent telephones, and 43 percent automobiles.

The South had relatively low indexes. But increases between 1950 and 1954 were high for all Southern States. In a good number of counties in and around the South, 1954 indexes were 100 percent or more above 1950. Some of the counties with index increases of more than 100 percent between 1950 and 1954 are Tunicia County, Mississippi; Breathitt County, Kentucky; and Beaufort County, South Carolina.

Evidences of the general rise in levels of living of farm-operator families are seen in increased consumption of goods and services, increased savings, lowered mortality rates, higher levels of education.

Basic indexes of farm-operator family levels of living are those for counties. The AMS report (Statistical Bulletin No. 204, "Farm-Operator Family Level-of-Living Indexes for Counties of the United States") lists counties in alphabetical order within each State and gives the indexes of every county for 1945, 1950, and 1954.

Indexes for State economic areas, States, geographic divisions, regions, and the United States, also given in the report, are arithmetic means of county indexes within areas.

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